Journal of the Society of Arts.

FRIDAY, AUGUST 31, 1866.

Announcements by the Council.

EXAMINATIONS, 1867.

The Programme of Examinations for 1867 is now published, and may be had *gratis* on application to the Secretary of the Society of Arts.

Proceedings of Institutions.

STOCKTON MECHANICS' INSTITUTE OF LITERATURE AND SCIENCE.—The Report for the year 1865 speaks of a diminution of members during the year, the number on the books being—First-class members, 35; second-class, 110; third-class, 55; fourth-class, 95; total, 295; showing a diminution of 43 as compared with the close of 1864, and although this falling off may in some measure be accounted for by the opening of other Institutes in the town, yet the Committee feel that the increasing population of the town ought to furnish new members to fill the places of such as withdraw. The circulation of books and periodicals has been 3,665, showing an increase as compared with last year. The classes have been arranged on the same plan which has proved successful in previous years. The classes conducted by Mr. Walker for the study of arithmetic, algebra, Euclid, geography, grammar, and writing, met five nights in the week:—Number of students entered, 35; average attendance—youths' class, 13; senior class, 6. Mr. Kelly's class for the study of freehand and mechanical drawing met once a-week; average attendance, 17. Fourteen students of Mr. Walker's class were examined by the West Riding Educational Board, out of which number six obtained certificates of merit. The £5 placed at the disposal of the Committee by Mr. Dodds, for the encouragement of the classes, has been equally divided amongst the six successful candidates, and expended in books of their own selection. Three Saturday evening entertainments were given, which were well attended. The working of the Penny Savings Bank has been very satisfactory, the deposits having amounted to £755 10s. 4d., and the withdrawals to £526 5s. 3d. The Committee have used their best exertions to maintain the high character of the news and reading room, but they have not felt justified in making additions to the library. In order to meet the wishes of a considerable portion of the members, a billiard room has been established. The members of the billiard club must be first or second class members of the Institute, and pay in addition a subscription of 10s. 6d. per year. The amount required for the purchase of the billiard table was raised by the members of the club in shares. The present number of members of the club is 45, of whom 22 are new members of the Institute. The financial statement shows that the receipts have been £231 18s. 7d., and there is a balance due to the treasurer of £51 15s. 8d.

EXAMINATION PAPERS, 1866.

The following are the Examination Papers set in the various subjects at the Society's Final Examinations, held in April last:—

(*Continued from page* 638).

ENGLISH LITERATURE.

THREE HOURS ALLOWED FOR THE TWO AUTHORS SELECTED BY THE CANDIDATE.

CHAUCER.

("Prologue to the "Canterbury Tales.")

SECTION I.

1. Ful worthi was he in his lorde's werre,
And thereto hadde he riden, noman ferre,
As well in Christendom as in hethenesse,
And evere honoured for his worthinesse.
At Alisandre he was whan it was wonne,
Ful ofte time he hadde the bord bygonne,
Aboven alle nacions in Pruce.
In Lettowe hadde reyced and in Ruce,
No christen man so oft of his degre.
In Gernade atte siege hadde he be
Of Algesir, and riden in Belmarie.
At Lieys was he, and at Satalie,
When they were wonne; and in the Greete see
At many a noble arive hadde he be.
At mortal batailles had he been fitene,
And foughten for our feith at Tramassene
In lystes thries and aye slayn his foo.

(*a.*) Write out the sense of this passage in modern English prose, keeping as closely as you well can to the original.

(*b.*) Explain the allusions.

(*c.*) Give a list of all the words which must be pronounced or accented differently from modern usage in order to preserve the versification.

2. Explain the following words:—*altherbest, lazar, vernicle, forby, thestat, tharray, tailles, solempne, ywrought, forpyned, ypiked, swinke.*

3. Explain these passages:—

Wel cowde he fortune the ascendent
Of his images for his pacient.

He rood upon a rouncy, as he couthe,
In a gowne of faldying to the kne,
A dagger hangyng on a laas hadde he.

In alle the orders foure is noon that can
So moche of daliaunce and fair langage.

4. Mention some of the grammatical constructions frequently used by Chaucer which have become obsolete.

SECTION II.

5. Describe either the Prioress, or the Clerk of Oxenford, as nearly as you can in the words of Chaucer.

6. What do you know of the shrine of Becket?

7. Give a short account of the pilgrimage to Canterbury as described by Chaucer.

8. Briefly sketch the life of Chaucer, and notice some of his most distinguished contemporaries.

SHAKSPEARE.

("King Lear"—"Richard III."—"As you like it.")

SECTION I.

(*a.*) Tut, I can counterfeit the deep tragedian;
Speak, and look back, and pry on every side,
Tremble and start at wagging of a straw,
Intending deep suspicion: ghastly looks
Are at my service, like enforced smiles;
And both are ready in their offices,
At any time, to grace my stratagems.

(*b.*) You touched my vein at first; the thorny point
Of bare distress hath ta'en from me the show
Of smooth civility: yet I am inland bred,
And know some nurture.

(*c.*) Jocky of Norfolk, be not so bold,
For Dickon thy master is bought and sold.

(*d.*) O reason not the deed: our basest beggars
Are in the poorest things superfluous.

(*e.*) That Julius Cæsar was a famous man:
With what his valour did enrich his wit,
His wit set down to make his valour live:
Death makes no conquest of this conqueror;
For now he lives in fame, though not in life.

(*f.*) When others are more wicked, not being the worst
Stands in some rank of praise.

(*g.*) Why, 'tis a boisterous and a cruel style,
A style for challengers; why, she defies me,
Like Turk to Christian.

(*h.*) Mine enemy's dog,
Though he had bit me, should have stood that night
Against the fire.

1. In what connexion does each of these passages occur?

2. Notice every peculiar grammatical construction, and every word employed in an unusual sense.

3. Give such explanatory notes, referring to the subject matter, as may seem to be required.

SECTION II.

4. Sketch the character either of King Lear or of Jaques.

5. Compare the characters of Buckingham and King Richard III.

6. Give an account of the plot of the first act of Richard III.

7. What do you know of the sources to which Shakspeare appears to have been indebted in constructing the plots of these three plays?

8. Give some account of the early editions of Shakspeare's plays.

BACON.

(The Essays.)

1. Give an outline of the essay, "Of Unity in Religion," or of that "Of Envy."

2. Explain the following passages, noticing anything peculiar in the words or grammatical construction:—

(*a.*) An ant is a wise creature for itselfe; but it is a shrewd thing, in an orchard, or garden.

(*b.*) Nay you shall see a bold fellow, many times, doe Mahomet's miracle.

(*c.*) The part of Epimetheus might well become Prometheus in the case of discontentments.

(*d.*) Virtue was never so beholden to human nature as it received its due at the second hand.

3. In what sense does Bacon use the following words:—*arietation, galliard, habilitation, monoculos, commodities, colour, fallaxes, propriety, quidditie, privado, success, mew.*

4. Explain this passage, and illustrate it by examples:—"Some books are to be tasted, others to be swallowed, and some few to be chewed and digested."

5. Explain this passage, and give a sketch of the argument which Bacon founds upon it:—"Men's thoughts are much according to their inclination: their discourse and speeches according to their learning and infused opinions; but their deeds are often as they have been accustomed."

SECTION II.

6. What does Bacon say respecting the first publication of the Essays in "The Epistle Dedicatorie?"

7. Give a short account of Bacon's life after he became Lord Chancellor.

8. What do you know of the Novum Organon?

TRENCH.

[On the Study of Words.]

1. What argument is drawn from the following passage:—"Whatsoever Adam called every living creature that was the name thereof," Gen. II., 19.

2. Words are said to be "the guardians of thought:" explain this and illustrate it by examples.

3. In what great particulars does the English language bear witness to the facts of our history?

4. Give examples of mistakes being embodied in names.

5. In what sense are names said to outlive things? Illustrate your answer by examples.

6. Explain these words:—*roué, mob, miscreant, talent, mammet, humanity, lumber, trivial, stipulation, cicerone, churl, surname.*

7. What is a synonym? Distinguish between *contrary* and *opposite—congratulate* and *felicitate—imagination* and *fancy—genuine* and *authentic—comprehend* and *apprehend—diffidence* and *despair.*

8. Explain the statement that there is poetry in words.

LOGIC AND MENTAL SCIENCE.

THREE HOURS ALLOWED.

FORMAL LOGIC.

1. What is the *Universal Principle of Reasoning?* How is it expressed by Aristotle? Explain and illustrate its meaning.

2. The conclusion of every syllogism is given in the premises. What argument has been founded against the utility of logic on this fact? How would you meet it?

3. What is meant by "*a term*" in logic? Many different *kinds* of terms have been enumerated by logicians; mention and explain the most important of these.

4. When are propositions said to be *opposed?* Explain the different kinds of opposition and give the rules of each?

6. What is meant by "*mood*," and what is meant by "*figure?*" For what kinds of arguments are the first, second, and third figures respectively best adapted, and why?

6. What general rules of the syllogism are violated in the following examples?—

Some literary men have been banished,
Some kings have been literary men,
Some kings have been banished.
Men are not feathered animals,
Eagles are not men,
Eagles are not feathered animals.
Many kings have been poets,
Many poets have been insane,
Some kings have been insane.

7. What is the classification of fallacies adopted by Whately? Explain the meaning of each class.

8. What is meant by the following terms employed to designate fallacies:—Homonymia, Amphibolia, Ignoratio elenchi, Petitio principii, Fallacia accidentis, Fallacia consequentis?

9. Analyse the following examples of reasoning and point out the *fallacies* contained in them:—

The French are a light-hearted people,
This man is a Frenchman,
Therefore he is light-hearted.
What I am you are not,
I am a man,
You are not a man.
All men are mortal,
Balbus is immortal,
Therefore Balbus is not a man.

LOGIC OF INDUCTION.

Mill's Logic.

1. Define induction.

2. Mention some operations said to be cases of induction which are not really so.

3. What axiom lies at the basis of all *pure* inductive reasoning?

4. What is the exact meaning which Mill attaches to the term "*Laws of Nature?*"

5. Give a brief sketch of Mill's analysis of the Law of Causation.

6. What is *observation*, and what is *experiment?* In what respect is the latter superior to the former as an instrument of research?

7. In determining a natural law, what is meant by the method of *agreement*, and what by the method of *difference?* Which affords the strongest evidence, and why?

8. What is meant by the *explanation* of natural laws? Give instances from the history of physical science?

9. What are empirical laws, and of what value are they in science?

MENTAL PHILOSOPHY.

Sir W. Hamilton's Lectures.

1. What is philosophy? How did it originate, and under what conditions must it be pursued?

2. Explain Hamilton's doctrine of the "Relativity of Human Knowledge."

3. What is expressed *generally* by the word consciousness? Is it one of the mental faculties?

4. Give Hamilton's classification of theories which have been formed respecting our knowledge of the external world.

5. Give Hamilton's classification of the *cognitive* faculties, and show exactly what he intends to include under each head.

6. Show the distinction between sensation proper and perception proper, and their relation to each other.

8. What is Hamilton's theory of perception, and to what other celebrated theory is it opposed?

8. Explain the "law of the conditioned" as the great fundamental fact of man's regulative faculty, and point out any of its applications.

MENTAL PHILOSOPHY.

Brown's Lectures.

1. How does Brown show the fundamental unity of physical and mental science?

2. Give some account of the physical processes in sensation.

3. What mental phenomena are usually ascribed to the sense of touch? Give an outline of Brown's criticism on this point.

4. In what respect does Brown differ from Reid on the subject of *perception?* Give the principal points of his polemic against the latter.

5. Explain Brown's theory of *attention.*

6. What are the *primary* and what the *secondary* laws of suggestion? Enumerate them.

7. Which of the faculties does Brown reduce to cases of simple suggestion, and which to cases of relative suggestion? Explain the method of this analysis.

8. Make a table showing Brown's classification of mental phenomena.

MORAL PHILOSOPHY.

Sir J Mackintosh.

1. Into what two main inquiries may the whole of ethical philosophy be divided? How have those two inquiries been confused?

2. Name some of the ancient schools of morals with their leading tenets.

3. Mention the most remarkable English writers who have advocated *utilitarianism*, and show in what *form* they have advocated it.

4. What different views have been held in England by ethical writers on the nature of conscience?

5. What are the leading ideas of Adam Smith's theory of modern sentiments?

6. What great principle was introduced by Hartley into the study of mental and moral philosophy? How did he apply it to morals?

7. How does Mackintosh attempt to mediate between opposite systems of moral philosophy?

MORAL PHILOSOPHY.

Fleming's Manual.

1. Explain the difference between principles of knowledge and principles of action.

2. How may the primary principles of human action be classified? In what way may they be modified?

3. Explain the two main theories which have been held by ethical writers concerning the nature of conscience.

4. Mention the *special views* of some of our most celebrated moralists on this subject.

5. Explain the fundamental theories which have been held on the nature of virtue. What ethical doctrines are included under each?

6. What celebrated writers have advocated the principle of *benevolence* and the principle of *utility* respectively as the ground of morals.

7. Explain the theory of morals advocated by Dr. Fleming in his manual.

(To be continued.)

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

NOTTINGHAM, 1866.

The business of the Sections commenced on Thursday, the 23rd instant. The following is a list of the Papers read:—

THURSDAY, AUGUST 23RD.

SECTION A.—MATHEMATICAL AND PHYSICAL SCIENCE.

J. Glaisher—Report on Luminous Meteors.

W. R. Birt—Report of Lunar Committee for Mapping Surface of Moon.

John Browning—On some Recent Improvements in Astronomical Telescopes with Silvered Glass Specula.

J. H. Gladstone and Rev. T. P. Dale—On Dispersion Equivalents.

J. Park Harrison—On the Heat Attained by the Moon under Solar Radiation.

Dr. T. L. Phipson—On Electro-negative Fogs.

Francis Galton—On an Error in the Usual Method of obtaining Meteorological Statistics of the Ocean.

Dr. Buys-Ballot—On the Method Adopted at Utrecht in Discussing Meteorological Observations.

SECTION B.—CHEMICAL SCIENCE.

President's Address.

A. Matthiesen—Preliminary Report on the Chemical Nature of Cast Iron.

J. F. Walker—On a Phosphatic Deposit in the Lower Green Sand of Bedfordshire.

Walter Weldon—On a Proposed Use of Fluorine in the Manufacture of Soda.

John Attfield—On the Assay of Coal, &c., for Crude Paraffin Oil.

Stevenson Macadam—On the Poisonous Nature of Crude Paraffin Oil, and the Products of its Rectification upon Fish.

SECTION C.—GEOLOGY.

President's Address.

H. Hicks and J. W. Salter—Second Report on the Geology of St. David's, Pembrokeshire.

H. Woodward—Second Report on the Fossil Crustacea.

W. S. Mitchell—Report of the Committee Appointed to Investigate the Alum Bay Leaf-Bed.

J. Gwyn Jeffreys—Report on Dredging among the Hebrides, with regard to Geological Considerations.

Dr. Leith Adams—Second Report on the Maltese Caves.

Professor Hitchcock—On the Geological Distribution of Petroleum in North America.

W. Pengelly—On Raised Beaches.

SECTION D.—BIOLOGY.

Professor Newton—Report on the Extinct Birds of the Mascarene Islands.

J. Gwyn Jeffreys—Report on Dredging among the Hebrides.

H. B. Brady—Remarks on the Rhizopod Fauna of the Hebrides.

John Shaw—On the Distribution of Mosses in Great Britain and Ireland as affecting the Geography and Geological History of the present Flora.

P. L. Sclater—On the Systematic Position of the American Prong-horn (*Antilocapra Americana*).

William Turner—On a Remarkable Mode of Gestation in an Undescribed Species of Arius.

O. Groom-Napier—On Food and Economical Value of British Butterflies and Moths.

O. Groom-Napier—On the Causes of the Variation in the Eggs of British Birds.

SECTION D.—DEPARTMENT OF PHYSIOLOGY.

Address by Professor Humphry.

Dr. John Davy—Is the Carbonate of Lime in the Egg Shells of Birds in a Crystalline or Amorphous State?

Dr. W. Sharp—On the Physiological Action of Medicines.

Dr. Cobbold—Remarks on the so-called Cattle Plague Entozoa.

SECTION D.—DEPARTMENT OF ANTHROPOLOGY.

Address by Mr. Wallace.

C. Carter Blake—On a Supposed Human Jaw from the Belgian Bone Caves.

W. J. Black—On Colonies in South Africa.

Thomas Wilkinson—Notes on Madagascar.

Consul T. J. Hutchinson—The Indians of the Paraná.

John Collinson—The Indians of the Mosquito Territory.

Dr. R. S. Charnock—On the People of Andorra.

SECTION E.—GEOGRAPHY AND ETHNOLOGY.

Sir Samuel W. Baker—On the Abyssinian Tributaries of the Nile.

Dr. Beke—On the Possibility of Diverting the Waters of the Nile into the Red Sea.

J. Crawfurd, Esq., F.R.S.—On Cæsar's Account of Britain and its Inhabitants.

Commander Lindsay Brine, R.N.—On the Eruption at Santorin, and its present condition.

Thomas Baines, Esq.—On the Probable Lower Course of the Limpopo.

Thomas Baines, Esq.—The Zambezi and its Westernmost Sources.

SECTION F.—ECONOMIC SCIENCE AND STATISTICS.

The President's Opening Address.

Professor Leone Levi—On the State and Prospects of the Rate of Discount with Reference to the recent Monetary Crisis.

Free Trade in Banking in the Western States of America and Manchooria (Tartary), from Statements of W. Wells Brown, and T. T. Meadows, Her Majesty's Consul at Newchang.—Communicated by Colonel Sykes, M.P., F.R.S.

Frederick J. Wilson—On a National Bank, and Payment of the National Debt.

SECTION G.—MECHANICAL SCIENCE.

President's Address.

W. J. Macquorn Rankine, LL.D., F.R.S.—Report of the Committee "On the Resistance of Water to Floating and Immersed Bodies."

W. J. M. Rankine, LL.D., F.R.S.—Remarks on the Experiments of the foregoing Committee.

Frederick Ingle—On Recent Improvements in the Application of Concrete to Fireproof Construction.

W. E. Carrett—On an Hydraulic Coal-Cutting Machine.

FRIDAY, AUGUST 24TH.

SECTION A.—MATHEMATICAL AND PHYSICAL SCIENCE.

Fleeming Jenkin—Report of the Committee on Electrical Standards.

G. J. Stoney—On a Nomenclature for Multiples and Submultiples to render Absolute Standards Convenient in Practice, and on the Fundamental Unit of Mass.

William R. Grove—Letter from Professor Matteucci on Earth-Currents.

Balfour-Stewart—Extract of a Letter from Senhor Capello, of Lisbon, on Magnetic Disturbances.

William Hooper—On the Electrical and Mechanical Properties of Hooper's India-rubber, for Submarine Cables.

Professor Jellett—On a Fluid possessing the Power of Rotating the Plains of Polarization of Rays of the Opposite Ends of the Spectrum in Opposite Directions.

J. R. Hind—Remarks on the Recent Extraordinary Outburst of the Variable Star in Corona.

Francis Galton—Conversion of Wind Charts into Passage Charts.

Cornelius Varley—On Comets, and especially on the Comet of 1811.

SECTION B.—CHEMICAL SCIENCE.

Dr. Daubeny—On Ozone.

T. L. Phipson—On an Extraordinary Iron-stone.

Peter Spence—On a New Process in the Manufacture of White Lead.

W. Crookes—On Disinfectants.

Dr. Crace Calvert—On the Oxidising Action of Carbon.

SECTION C.—GEOLOGY.

C. Spence Bate—An Attempt to Approximate the Date of the Flint Flakes of Devon and Cornwall.

Rev. P. B. Brodie—On the Correlation of the Lower Lias at Barrow-on-Soar, Leicestershire, with the Same Strata in Warwick, Worcester, and Gloucester shires: and on the Occurrence of the Remains of Insects at Barrow.

H. A. Nicholson—On Fossils from the Graptolite Shales of Dumfriesshire.

W. Pengelly—Second Report of the Committee for Exploring Kent's Cavern, Devonshire.

W. Topley—On the Physical Geography of E. Yorkshire.

A. B. Wynne—Notes on the Physical Features of the Land as Connected with Denudation.

Prof. Ansted—On Intermittent Discharges of Petroleum and Large Deposits of Bitumen in the Valley of Pescara, Italy.

Prof. Ansted—On a Salse or Mud Volcano on the flanks of Etna, commencing to erupt in the month of January last.

SECTION D.—BIOLOGY.

The President's Address.

Rev. F. W. Farrar—On the Teaching of Natural Science in Public Schools.

Clements R. Markham—Results of the Chinchona Cultivation in India.

Dr. Cobbold—On the Entozoa of the Dog in Relation to Public Health.

SECTION D.—DEPARTMENT OF PHYSIOLOGY.

Dr. Ransom—On the Conditions of the Protoplasmic Movements in the Egg of Osseous Fishes.

Dr. John Davy—On the Colour of Man.

Drs. J. H. Gilbert and J. B. Lawes—On the Sources of the Fat of the Animal Body.

SECTION D.—DEPARTMENT OF ANTHROPOLOGY.

E. B. Tylor—Phenomena of the Higher Civilisation Traceable to a Rudimental Origin among Savage Tribes.

Dr. Jas. Hunt—On the Principle of Natural Selection applied to Anthropology, in Reply to Views Propounded by some of Mr. Darwin's Disciples.

SECTION E.—GEOGRAPHY AND ETHNOLOGY.

W. G. Palgrave—On Arabia.
John Crawfurd—On the Migration of Cultivated Plants with Reference to Ethnology.
Dr. Mann—On the Physical Geography, Climate, and Tribes of Natal.
Professor Ansted—On the Physical Geography of the Eastern part of the Crimea, and the Peninsula of Taman.
C. R. Markham—On the Aleppy Mud Bank.

SECTION F.—ECONOMIC SCIENCE AND STATISTICS.

Professor A. W. Williamson—Report of the Committee of the British Association on Scientific Evidence in Courts of Law.
Professor Leone Levi—Report of the Committee of the British Association on Uniformity of Weights and Measures.
Joseph White, F.R.C.S., Ed., &c.—On the Statistics of the General Hospital, near Nottingham.
Frederick J. Wilson—On Classification of the various Occupations of the People.
Rev. W. Caine—Some of the Results of the Free Licensing System in Liverpool during the last four years.

SECTION G.—MECHANICAL SCIENCE.

W. J. M. Rankine, LL.D., F.R.S.—On the Influence of Friction in the Cylinder upon the Efficiency of Steam.
Captain Noble, R.A.—On the Penetration of Shot and Resistance of Iron-Clad Defences.
Captain D. Galton, R.E.—A Few Remarks on the Chalmers Target.
Captain Wynants—On Barytic Powder.
J. B. Fell—On Locomotive Engines and Carriages on the Central Rail System for Working on Steep Gradients and Sharp Curves as Employed on the Mont Cenis.
Monsieur Bergeron—Description of a Pneumatic Process for Traction on Steep Inclines.

SATURDAY, AUGUST 25TH.

SECTION A.—MATHEMATICAL AND PHYSICAL SCIENCE.

Prof. H. J. S. Smith—Report on the Theory of Numbers.
Prof. R. Harley—On Tschirnhausen's method of Transformation of Algebraic Equations, and some of its Modern Extensions.
Prof. R. Harley—On Differential Resolvents.
Prof. Plücker—On Complexes of the Second Order.
Prof. H. J. S. Smith—On a Property of Surfaces of the Second Order.
W. H. L. Russell—On the Hyperelliptic Transcendents (Göpe system).
M. A. Cornu—On a New Geometrical Theorem relative to the Theory of reflection and Refraction of Polarized Light.
A. J. Ellis—On Plane Stigmatics.
A. J. Ellis—On Practical Hypsometry.

SECTION B.—CHEMICAL SCIENCE.

This Section did not meet on Saturday.

SECTION C.—GEOLOGY.

J. F. Walker—On the Lower Green Sand of Bedfordshire.
R. A. Peacock—On a Case of Gradual Change of Form and Position of Land at the South End of the Isle of Walney.

SECTION D.—BIOLOGY.

This Section did not meet on Saturday.

SECTION D.—DEPARTMENT OF PHYSIOLOGY.

This Department did not meet on Saturday.

SECTION D.—DEPARTMENT OF ANTHROPOLOGY.

This Department did not meet on Saturday.

SECTION E.—GEOGRAPHY AND ETHNOLOGY.

Col. Goldsmid—Notes on Eastern Persia and Western Beloochistan.
Col. Tremenheere—Notes on the Physical Geography of the Lower Indus.
J. Reddie—On the Various Theories of Man's Past and Present Condition.
F. Whymper—Progress of the Russo-American Telegraph Expedition *viâ* Behring's Straits.
Henry H. Howorth—Some New Facts in Celtic Ethnology.

SECTION F.—ECONOMIC SCIENCE AND STATISTICS.

This Section did not meet on Saturday.

SECTION G.—MECHANICAL SCIENCE.

Fleeming Jenkin, F.R.S.—On a New Arrangement for picking up Submarine Cables.
R. Mushet—On the Treatment of Melted Cast Iron, and its Conversion into Iron and Steel by the Pneumatic Process.

MONDAY, AUGUST 27TH.

SECTION A.—MATHEMATICAL AND PHYSICAL SCIENCE.

Colonel Sykes—Report of Balloon Committee.
J. Glaisher—Results of Balloon Ascents during the past year.
G. J. Symons—Report on Rainfall.
M. Janssen—On the Spectrum of the Atmosphere and that of the Vapour of Water.
M. Janssen—On a Portable Spectroscope and a portable Hygrometer.
Prof. Rankine—Description of a new Proportion Table equivalent to a Slide-rule 13 ft. 4 in. long, by T. D. Everett, D.C.L.
A. Claudet—On a New Process for Producing Harmonious and Artistic Photographic Portraits.
T. Holmes—On the North Atlantic Telegraph.

SECTION B.—CHEMICAL SCIENCE.

H. Larkin—On the Magnesium Lamp.
Dr. Gladstone—On the Refraction and Dispersion Equivalents of Chlorine, Bromine, and Iodine.
E. T. Chapman and W. Thorp—On the Olefines in Relation to the Isomerism of Vinic Alcohols.
Dr. Bence Jones — On the Chemical Action of Medicines.
J. B. Lawes and J. H. Gilbert—On the Sources of the Fat of the Animal Body.
J. B. Lawes and J. H. Gilbert—On the Accumulation of the Nitrogen of Manure in the Soil.

SECTION C.—GEOLOGY.

Dr. W. H. Ransom—On the Occurrence of Felis Lynx as a British Fossil.
James Oldham—On the Discovery of Ancient Trees Below the Surface of the Land, at the Western Dock now being Constructed at Hull.
F. M. Burton—On the Occurrence of Rhœtic Beds, &c., near Gainsborough.
Mons. Pierre de Tchiatchef—Eight Years' Researches in Asia Minor.
Sir R. I. Murchison—On the Various Tracts of England and Wales in which no Productive Beds of Coal can reasonably be looked for.

H. Govier Seeley—On Some Characters of the Brain and Skull in Plesiosaurus.
H. Govier Seeley—On the Carstone.

SECTION D.—BIOLOGY.

Dr. W. M'Intosh—On a new Molluscoid Animal.
Dr. W. M'Intosh—List of Turbellaria, and Annelida of North Uist.
R. Garner—On the Power which some Rotifers have of attaching themselves by means of a Thread.
Dr. G. D. Gibb—Variations in the great Arterial Blood-vessels.
A. R. Wallace—On Reversed Sexual Characters in a Butterfly, and their Interpretation on the Theory of Modifications and Adaptive Mimicry (illustrated by specimens).
C. Stewart—Notes on the Structure of the Echinoidea Regularia, with Special Reference to their Classification.
E. Ray Lankester—On the Asexual Reproduction and Anatomy of Choetogaster Vermicularis (Müll).
H. Woodward—On some Points in the Structure of Limulus, Recent and Fossil.
Dr. Ransom—On the Structure and Growth of the Ovarian Ovum in the Gasterosteus Leiurus.
Rev. A. Merle Norman—On the Crustacea, Echinodermata, Polyzoa, and Cœlenterata of the Hebrides.
G. S. Brady—Report on the Ostracoda Dredged amongst the Hebrides.
Dr. Cobbold—Supplementary Report on Experiments with Entozoa.
Professor Oswald Heer—On the Miocene Flora of N. Greenland.

SECTION D.—DEPARTMENT OF PHYSIOLOGY.

Dr. Acland—Letter communicating Result of Application to the General Medical Council as to a Grant for Investigating the Physiological Action of Remedies.
Dr. Sibson—On the Movements, Structure and Sounds of the Heart.
Colonel Sir. J. E. Alexander—On the Effects of the Pollution of Rivers.
Dr. B. W. Richardson—Report on Amyle.
Dr. Gamgee.—On the Action of Carbonic Oxide on Blood.

SECTION D.—DEPARTMENT OF ANTHROPOLOGY.

John Beddoe, M.D.—On the Stature and Bulk of the Irish, and on Degeneration of Race.
C. Carter Blake—Skulls from Round Barrows in Dorsetshire.
A. Ernst—Anthropology of Caracas.
John Shortt, M.D.—Habits and Manners of Marvar Tribes of India.
E. B. Bogg—Fishing Indians of Vancouver's Island.
Prof. Leitner—Papers from Lahore.

SECTION E.—GEOGRAPHY AND ETHNOLOGY.

General Sir. A. S. Waugh—On Mr. W. H. Johnson's Explorations from Leh to Khoton in Chinese Tartary.
J. Thomson—Visit to the Ruined Temples of Cambodia.
R. H. Major—On Priority in Discovery of the Madeira Group.
Dr. Mann—On the Kaffirs of Natal.
R. W. Payne—On the Trans-Vaal District of South Africa.
Dr. Beke—On the Lake Kurà of Arabian Geographers and Cartographers.
Dr. H. Rònay—On the Voguls.

SECTION F.—ECONOMIC SCIENCE AND STATISTICS.

James Heywood, F.R.S.—On the Subjects Required in the Classical Tripos Examination, and in the Trinity College Fellowship Examination at Cambridge.
Dr. Daubeny—Statistics as to the Number of Graduates in Arts and Medicine at Oxford for the Last Two Centuries.
E. Renals—On the Influence of Science Classes in Mechanics' Institution.

SECTION G.—MECHANICAL SCIENCE.

S. J. Mackie—On Zinc Sheathing for Iron Ships.
Capt. Wynants, Royal Belgian Artillery—On Barytic Powder for Heavy Ordnance; communicated by C. Vignoles, F.R.S.
Admiral Sir E. Belcher—On the Application of the Expansive Power of moistened Vegetable Matter to the Raising of Weights.
H. Dircks—On Steam Boiler Explosions with Suggestions for their Investigation.
W. D. Gainsford—Descriptions of a Newly Invented System of Ordnance.
W. D. Gainsford—Description of an Invention for Locomotive Adhesion.

TUESDAY, AUGUST 28TH.

SECTION A.—MATHEMATICAL AND PHYSICAL SCIENCE.

The President—Report of the Committee on the Transmission of Sound through Water.
Prof. Hennessy—On Meteoric Showers considered with reference to the motion of the Solar System.
M. Hofmann—Remarks on a new Telemeter; a new Polarimeter; a new Polarizing Microscope; and various Spectroscopes.
L. Casella—On a new Anemometer.
C. F. Varley—On Certain Phenomena which presented themselves in Connection with the Atlantic Cable.
C. F. Varley—On a New Method of Testing Electric Resistance.
J. Glaisher—Experiments off Ventnor with Mr. Johnson's Deep Sea Pressure Gauge.
Prof. Rankine—On Tables of Pairs of Stars for the Approximate Finding of the Meridian.
J. P. Joule—Determination of the Mechanical Equivalent of the Thermal Unit by experiments on the Heat evolved by Electric Currents.
E. Whymper—A Novel Experiment to determine the Formation of Glaciers.
Professor Hennessy—On the Diurnal Period of Temperature in relation to other Physical and Meteorological Phenomena.
— Arnold—On the Climate of Aldershot.
F. P. Fellows—On certain Errors in the received Equivalent of the Metre, &c.

SECTION B.—CHEMICAL SCIENCE.

J. A. Wanklyn—Report on Isomeric Alcohols.
A. R. Catton—Report on the Synthesis of certain Organic Acids.
Dr. Bauer—The Action of Chlorine on Amylene.
C. Tomlinson—On some Phenomena connected with the Melting and Solidifying of Wax.
Dr. Janssen—Sur le Spectre de l'Atmosphere Terrestre et celui de la Vapour d'Eau.
Dr. Janssen—Sur une Spectroscope à Vision Directe.
Dr. Lyon Playfair—To draw attention to the present condition of our knowledge on the Origin of Muscular Force in Animals.
J. M. McGauley—The Nature and Properties of Ozone and Antozone Demonstrated Experimentally.
A. Bird—On the Purification of Terrestrial Drinking Waters, by Neutral Sulphate of Alumina.

SECTION C.—GEOLOGY.

Dr. C. Le Neve Foster—On a Curious Lode or Mineral Vein in New Rosewarne Mine, Gwinear, Cornwall.
E. Brown—On the Drift Deposit on the Weaver Hills.

H. Govier Seeley—On the Characters of Dolichosaurus, a Lizard-like Serpent of the Chalk.

Edward Hedley—On the Sinking of Annesley Colliery.

James Oakes—On a Peculiar Denudation of a Coal Seam in Coates' Park Colliery.

Dr. Beke—On the Island of St. John, in the Red Sea. (The Ophiodes of Strabo.)

Prof. Oswald Heer—On the Miocene Flora of North Greenland.

J. E. Taylor—On the Relations of the Upper and Lower Crags near Norwich.

C. W. Peach—Observations on, and Additions to, the List of Fossils found in the Boulder Clay of Caithness, N.B.

Henry Brigg, junr.—On the occurrence of Flint Implements near Thetford, on the Little Ouse.

John Gunn—On the Anglo-Belgian Basin of the Forest-Bed of Norfolk and Suffolk, and the Union of England with the Continent during the Glacial period.

SECTION D.—BIOLOGY.

Dr. Carpenter, F.R.S.—On Comatula rosacea, C. celtica, and other Marine Animals from the Hebrides.

H. Hennessy, F.R.S.—On the probable cause of the existence of a North European Flora in the West of Ireland, as referred to by the late Professor E. Forbes.

C. Spence Bate, F.R.S.—On the dentition of the Common Mole (Talpa Europœa).

W. Tennant—On the traces of an Irish Lake Dwelling, found by Captain L'Estrange, in the County of Cavan.

E. Perceval Wright, M.D.—Notes on Lithosia caniola, with reference to the question of its origin as a species.

John Hogg, F.R.S.—On the ballast Flora of the coasts of Durham and Northumberland.

J. J. Cleater—A few thoughts, speculative and from observation, on Color and Chromula.

W. Moggridge—On the occurrence of Lemna arrhiza in Epping Forest.

W. Moggridge—On the zones of the Coniferæ from the Mediterranean to the crest of the Maritime Alps.

F. Buckland—On the scientific cultivation of a Salmon River.

F. Buckland—On the Exhibition of Fish Culture at Boulogne.

John Hoare—On the Oyster Fisheries in Ireland.

J. K. Lord—To exhibit specimens illustrative of the Natural History of N. W. America.

Browne Thomas—On the application of the Greek and Latin Languages to scientific nomenclature.

E. Perceval Wright, M.D.—Notes (botanical) of a Tour in the Islands of Arran, West of Ireland.

N. B. Ward, F.R.S.—The Poor Man's Garden.

SECTION D.—DEPARTMENT OF PHYSIOLOGY.

Dr. Cobbold—Supplementary Report of Experiments with Entozoa.

Dr. Richardson—Physiological Demonstrations of Local Insensibility.

Dr. Norris—On Muscular Irritability, and the relations which exist between Muscle, Nerve, and Blood.

Dr. Foster—On a Peculiar Change of Colour in a Mulatto.

W. L. Scott—On the Presence of Ammonia and its Homologues in the Blood.

SECTION D.—DEPARTMENT OF ANTHROPOLOGY.

Dr. Paul Broca—Researches into the Anthropology of Lower Brittany.

Professor Huxley—Remarks on Two Extreme Forms of Human Crania.

Dr. James Hunt—Cranial Measurements, Colour of Hair and Eyes, &c., of Modern Norwegians.

A. H. W. Ingram—Exhibition of a Slate Armlet.

J. W. Flower—Notice of a Kjökkenmödding in the Island of Herm.

J. Plant—Human remains from Poole's Cavern.

Dr. Mann—Mental and Moral Characteristics of Zulu Kafirs of Natal.

Vice-Admiral Sir Edward Belcher—Stone Implements of Esquimaux.

W. Bollaert—Central American Hieroglyphs.

E. P. Haughton—Land Dayas of Upper Sarawak.

SECTION E.—GEOGRAPHY AND ETHNOLOGY.

P. B. Du Chaillu—On the Physical Geography and Tribes of Western Equatorial Africa.

George Grove—Report on the First Expedition of the Palestine Exploration Fund.

Captain Godwin-Austen—On the Pangong Lake in Thibet.

R. Dunn—On some of the bearings of Archæology upon certain Ethnological Problems and Researches.

Sir Walter Elliott, K.C.B.—On a proposed Ethnological Congress at Calcutta.

The Bishop of Mauritius—On the N.E. Province of Madagascar.

SECTION F.—ECONOMIC SCIENCE AND STATISTICS.

Colonel Sykes—Statistics of the Charitable, Educational, Industrial, and Public Institutions founded by the Native Gentry of India during the last five Years.

— Wilkinson—On the Consumption and Cost of Intoxicating Liquors in the United Kingdom in 1865.

— Felkin—Statistics of the Hosiery and Lace Trades in Nottingham.

Rev. A. S. Worthington—Remarks on the Unequal Proportion between the Male and Female Population of some manufacturing and other Towns, with concurrent Phenomena shown by the Registrar-General's Returns.

George Sentor—On the Diminution of Accidents in Coal Mines since the appointment of Government Inspectors.

Thomas Browne—On the Transfer of Real Property.

SECTION G.—MECHANICAL SCIENCE.

John Daglish—On the Counterbalancing of Winding Engines for Coal Mines.

William Fairbairn, LL.D., F.R.S.—Description of the means employed for removing and replacing in a new position the Iron Columns of a Fire-proof Cotton Mill.

G. D. Hughes—On Rotary Engines, with special reference to one invented by W. Hall.

W. Hooper—On the Electrical and Mechanical Properties of India-rubber Insulated Wire.

George Fawcus—Improvements in Pontoon Trains.

N. P. Burgh—On the Action and Effect of Flame in Marine Boilers.

WEDNESDAY, AUGUST 29TH.

SECTION A.—MATHEMATICAL AND PHYSICAL SCIENCE.

Rev. Professor Harley—Remarks on Boole's Mathematical Analysis of Logic.

A. Claudet—On a Variable Diaphragm for Telescopes and Photographic Lenses and a Magnifying Stereoscope with one lens.

Evan Hopkins—On the Depolarization of Iron Ships.

J. Traill Taylor—On a Defect in the Demonstrating Polariscope, with a Simple and Effective Remedy.

H. J. S. Smith—On the Large Prime Number calculated by Mr. Barrett Davis.

W. L. A. Russell—Hyperelliptic Functions (Weierstrass' Method).

C. Willich—On the Partition of the Cube.

SECTION D.—DEPARTMENT OF PHYSIOLOGY.

Dr. Richardson—On the Comparative vitality of the Jewish and Christian Races.

Dr. Foster—Note on an Addition to the Sphygmograph.

W. L. Scott—On the Normal Existence of Quinine as an Animal Principle.

SECTION D.—DEPARTMENT OF ANTHROPOLOGY.

S. Phillips Day—On the Power of Rearing Children among Savage Tribes.

Dr. Gustave Lagneau—Saracens in France.

Professor Tennant—On the Traces of an Irish Lake Dwelling, found by Captain L'Estrange.

H. Prigg—Flint Implements from Drift of Little Ouse Valley.

W. Bollaert—Ancient Engravings on Stone, Southern Peru.

C. Carter Blake—On the Condylus Tertius.

J. Anderson—Recent Exploration in Chambered Cairns of Caithness.

C. S. Wake—Antiquity of Man in Relation to Comparative Geology.

SECTION E.—GEOGRAPHY AND ETHNOLOGY.

W. F. Webb and Sir Samuel Baker—On the Researches of Livingstone, with Observations on the Negro Character.

Sir R. I .Murchison, Bart.—On the Reported Discovery of the Remains of Leichardt in Australia.

J. Crawfurd—On the Invention and History of Written Language.

Dr. Charnock—On Andorra.

SECTION F.—ECONOMIC SCIENCE AND STATISTICS.

Rev. C. Sewell—On Hindrances to Success of Popular Education.

Thomas Browne—On the Transfer of Real Property.

Charles Tebbut—On the Violation of the Principles of Economic Science caused by the Law of Distraint for Rent.

G. Bell Galloway—On Inventors and Inventions.

Frederick Wilson—On the Occupation and Ownership of Waste Lands.

J. G. Joyce—On the Practicability of Employing a Common Notation for Electric Telegraphy.

The Association closed its proceedings on Wednesday, after one of the most successful meetings which has ever taken place. The numbers attending were 2,303, a total only exceeded on four previous occasions, and then at towns with a far larger population than Nottingham. The reception given by Nottingham to the Association was remarkable, not only for the excellent and liberal arrangements made by the Town for the transaction of the business of the Association, and the public entertainment of the visitors in the shape of *soirées* and other *fêtes*, but for the immense amount of private hospitality accorded to the members by the inhabitants of the town and neighbourhood, who received a very large number into their houses as guests during the meeting. The Excursions to the various places were extremely numerous, and at each place the members were handsomely entertained by some one or more of the residents in the neighbourhood of each locality, to the number of not less than 1,500 persons on the Saturday, as well as about the same number on the Thursday excursions.

COLLECTION OF PERIODICAL LITERATURE FOR THE PARIS EXHIBITION.

In the *Publishers' Circular* for the 1st June, 1866, the collection of periodical and ephemeral literature, now in course of formation by the British Executive for the Paris Exhibition, is thus alluded to:—

"The report of the French Minister upon the Universal Exhibition to be held in Paris next year, declares the intention of his government to be that of making such exhibitions permanent representations of modern society in its various forms of activity. Acting upon this announcement, our Committee of Council on Education have determined to exhibit a complete collection of our periodical literature, containing one specimen of each newspaper, review, literary, artistic, or scientific journal, magazine, tract, pamphlet, or the like published in Great Britain or the colonies during the past year. Even street ballads, which future Macaulays may find not altogether worthless, are to be included in the collection, to which all publishers, editors, and authors concerned are invited to contribute.

"The idea is an excellent one, and marks an advance upon that somewhat grudging recognition of publishing, as one of the features of modern civilisation, which characterised our own Great Exhibition of 1862. The shyness of our Royal Commissioners of anything like literary productions arose, as was admitted, entirely from the system of regarding everything exhibited as a possible object of medals or honourable mention..... Any way, it must be admitted that a complete exhibition of the present state of English literature is a very proper object of a universal exhibition. Mr. Baines, some time since, in a speech in the House of Commons, stated some marvellous facts on this subject; and if such a section had been included in our Exhibition of 1851, there can be no doubt that the collection about to be formed, if it should attain anything like an approach to completeness, would have shown a contrast beyond anything which could be imagined by those who have not inquired into the subject. It would show, we believe, a vast improvement in the literary and artistic qualities of popular literature which could not fail to strike the most hasty observer."

The collection spoken of in these terms in the *Publishers' Circular*—a publication which records periodically all that is done or doing in the world of literature—is now fairly started. Such contributions as have already been made in the shape of newspapers, magazines, pamphlets, and the like, have been sorted and classified under separate heads according to a pre-arranged plan. As far as newspapers—properly so called—are concerned, whether metropolitan or provincial, daily or weekly, it may be said that such arrangements have been made, or are making as will ensure the getting together of a complete collection of periodical literature as represented under that section. But there is another class of publication which it is certainly desirable to have included in the collection, and which just at this time is probably represented more largely in this country than it ever was before—the class, namely, of magazines and reviews of the better sort, appearing quarterly, monthly, or at other regular intervals throughout the year.

A scheme such as this, which is being organised for the express purpose of exhibiting at this great civilisation-show at Paris, a collection which certainly exhibits that civilisation in a way peculiarly distinct and obvious, can surely not be wanting in interest to any among us. Not even the work of the engineer or the mechanician, peculiarly modern as such work is; not the most wonderful achievements of science or mechanical invention can be looked upon as representing the activity of modern civilisation more completely than do these sheets of printed paper which it is proposed to exhibit, and by means of which the minds of all men living in this nineteenth century are so largely, and in the main so wholesomely, influenced. Regarded only from a mechanical point of view, the fact that such enormous numbers of newspapers and other periodicals are diffused among us day after day and week after week is sufficiently surprising. Under this aspect alone the Press has a fair claim to rank among our modern wonders; while under that other aspect, which puts the thing before us in a less material form, and shows us millions of human intelligences instructed and entertained by this wonderful engine of mind-culture, the subject becomes even more capable still of awakening our attention and holding our interest.

It is much to be desired that such a collection as this

should be a complete one, and no pains will be spared on the part of those who are employed by the Commissioners of the Paris Exhibition to make it so; but at the same time it will be obvious that the labours of these last may be materially lightened, and the attainment of their object helped forward, by the co-operation of all those who are engaged in the publication of any kind of periodical of the sort included in the present scheme. It has been mentioned that, in some particular branches of periodical literature the collection is at present deficient. The class of quarterly and monthly reviews and magazines is still almost entirely unrepresented, and this fact is now pressed upon the attention of all editors and publishers of such, in order that they may, if they think proper, supply this deficiency, and so help forward, very materially, a work which, with all the assistance that can be furnished, will not be an easy one to accomplish.

It has been thought that a more central situation than South Kensington might be more convenient for those who were willing to send such periodicals as those above mentioned for exhibition at Paris, and advantage has therefore been taken of the obliging offer of Messrs. Adams and Francis, of Fleet-street, to receive and keep for the Commissioners any copies of works which may be sent to them. A single copy of each review, magazine, or other similar publication is all that is required, and any single number which has appeared within the year 1866 will be available for the collection.

All contributions to be directed to Messrs. Adams and Francis, 59, Fleet-street, E.C., and marked outside, "Collection of Literature for the Paris Exhibition."

THE GREAT MUSICAL PRIZE OF FRANCE.

The *Grand Prix de Rome*, for musical composition, was instituted in France in the year 1802, on the proposition of M. Grétry, member of the National Institute, as the Academy was then denominated. For sixty-one years this prize was awarded by the Academy of the Beaux-Arts, but by the decree which changed the whole system of grand prizes, the competition for the great musical prize was transferred to the Conservatoire, and the second prize and accessists formerly awarded were suppressed.

The conditions of the competition are—that the young musicians or pupils shall be born in France, be under twenty-five years of age, and submit to a preliminary trial which lasts for eight days. Those who are admitted to the final competition are allowed twenty-five days for their prize composition. They are each allotted a separate room in the Conservatoire, take their meals there at a common table, and are not allowed to quit the establishment until their task is accomplished.

This year the number of aspirants who passed the preliminary examination was five, and the subject of the cantata was *Dalila*, a composition for three voices—soprano, tenor, and bass, the poem being the composition of M. Edouard Vierne, for which a prize of 500 francs was established under the will of the late M. Deschaume.

The prize was unanimously awarded to M. Pessard, a young man of twenty-three, pupil of M. Carafa; and the prize production is pronounced by M. A. Elevart, of the Conservatoire, as exhibiting remarkable dramatic feeling. The successful piece was executed by Madame Sasse, M. Ismael, of the Théâtre Lirique, and M. Sollivet, a member of the Opera chorus, who exhibited his facility as a musician by executing his portion of the music at a few hours' notice. The accompaniment was played on the piano by M. Albert Lavignac. The other competitors are said to have exhibited considerable talent, and the victory was not therefore an easy one. The unsuccessful cantatas were performed by MM. Villaret, of the Opera, Collin and Inlema, in-door pupils of the Conservatoire, Caron and David, Madame Meillet, of the Grand Théâtre of Marseilles, and Mdlles. Marie Roze, and Girard, of the Opéra Comique.

The jury was composed of MM. Ernest Boulanger, Duprato, Eunel, Gevaërt, Georges Kastner, Aimé Maillart, Ernest Reyer, and Semet, elected by lot from a list of twenty-two composers, and presided over by M. Auber.

The competitions are conducted in private, but the successful cantata is afterwards performed publicly in the theatre of the Conservatoire, with a full orchestral accompaniment, by the same vocalists who interpreted it before the jury.

It will not be out of place here to mention that the general annual concours of the Conservatoire are just concluded. The competitions conducted in private were concluded on the 17th instant, and those which take place in public commenced on the 20th and ended on the 28th instant.

Fine Arts.

Distribution of Works of Art in France.—The immense amount of patronage extended to the arts by the Imperial Government is indicated by the list of pictures, statues, busts, and other works distributed on the occasion of the late Imperial *fête*. In addition to the works purchased for the galleries of Versailles and the Luxembourg, pictures and statues were sent to no less than 112 local museums; many of these were purchased at the last Paris Exhibition, while others are original works, or copies of the old masters, specially executed on commission for the purpose. The portrait painters received orders during the year for full or half-length portraits of the Emperor and Empress for 38 sub-prefectures, 34 hotels de ville, the Polytechnic School, and the Asylum at Charenton. In addition to all these, pictures were presented to churches and chapels in 52 departments in France. At a moderate calculation, therefore, the number of works ordered or purchased by the Government for public institutions during a single year could not have been far short of 300.

Annual Distribution of Honours in Paris.—The 15th of August, when the *fête* of Napoleon is celebrated, is also the day for the distribution of the medals awarded by the jury of the annual Exhibition of Fine Arts to the pupils of the Ecole des Beaux Arts, and also of the decorations bestowed by the Emperor. The former ceremony takes place in the great square room of the Louvre, under the presidency of the Minister of the Imperial Household and of the Fine Arts, assisted by the Superintendent of that Department, Count de Nieuerkerke, and the professors of the Ecole des Beaux Arts, The announcement of the honours bestowed by the Emperor is made officially in the *Moniteur*, and the list includes a considerable number of artists and literary men. On the present occasion M. R. A. Gautier, Secretary-General of the Minister of Beaux Arts, has received the cross of Grand Officier of the Legion of Honour; M. Gounod, the composer, M. Van Cleemputte, architect, M. Giraud, painter, M. Morel Fatio, Keeper of the Marine and Ethonographical Galleries in the Louvre, and M. Brice, Chief of the Bureau of the Ministry of Beaux Arts, have been raised to the grade of officers of the Order; and the following, amongst others, have been nominated Chevaliers:—M. Rouillard, professor in the School of Design, M. Taine, professor in the Ecole des Beaux Arts, and author of a remarkable work on Italy, of which only one volume has yet appeared; M. Claude, librarian of the Bibliothèque Impériale; the Abbé Martigny, author of several learned works on archæology and history; M. E. G. Rey, the Eastern explorer; M. Céenac-Moncault, historian and archæologist; M. de Baecker, archæologist; the architects, Lefaure, Pellieux; the painters, Carrier, Busson, Gide, Merle, and Schlesinger (Saxon); the sculptors, Carpeax and Gruyère; and the engravers, Merley, Girard, and Girardet (Swiss). The young artist of the Ecole des Beaux Arts who has won the *Grand Prix de Rome* is the

son of the well known natural philosopher and director of the porcelain works of Sévres, M. Regnault, and pupil of MM. Cabanel and Lamothe. The Minister paid generous tribute to the memory of three deceased artists, the sculptor Nanteuil, and the painters Troyon and Bellangé, and in the latter portion of his address he announced that it had been decided to make another change in the system of voting the rewards, and of the election of the juries of the annual Exhibitions. The Minister referred to the small number of artists who voted for the award of the two grand Medals of Honour, which, it will be remembered, were not granted this year, and expressed it as his opinion that it was difficult for them to undertake the responsibility of deciding who amongst themselves, at once candidates and judges, should receive these great medals. He explained that the arrangements would be modified for the exhibition of next year, and that the jury would, as formerly, have the awarding of the medals of honour. As regards the jury a change is also announced: by the late regulation two-thirds of the members were elected by the artists, and the remainder by the Administration of the Fine Arts; in future, one-third are to be named by the Academy of Beaux Arts, one-third only elected by the artists, and the rest appointed by the Administration, as before. Thus, the Academy, which has been excluded from any part in the management, either of the education of artists or of the annual exhibitions, since the remodelling of the Ecole des Beaux Arts, obtains a voice in the matter, but at the expense of the general body of artists. Another point in the Minister's speech deserves attention. In reference to the coming year, Marshal Vaillant said:—"It is the opinion of the Imperial Government that annual exhibitions are the best encouragement to artists, because they continually draw the attention of the public to works of art; the Emperor therefore has decided that not even the Universal Exhibition itself shall give rise to an exception. It would be an error to conclude that the two exhibitions to be held next year will compete with each other, for the International Exhibition will include works produced since 1855, that is to say for twelve years, and the space not being unlimited recent pictures would stand at a great disadvantage as compared with older works, so that the *salon* of 1867 will be shorn of none of its value."

Commerce.

ALGERIAN PRODUCTS.—The *Moniteur Industriel* of the 9th August, publishes an interesting account of the natural resources of this colony. It states that these are immense. The mineral products of themselves would alone make the fortune of a colony, its soil contains ores of iron, copper, nickel, zinc, lead, antimony, and mercury sufficient to supply all the wants of France. Stone and marbles of all kinds abound everywhere, among which statuary marble and the translucent onyx are especially sought after by manufacturers of ornamental objects, who make of it clocks, cups, vases, and candlesticks of great value. There are besides numerous mines of rock salt, salt lakes, and salt marshes. To work these mines (the greater part of which are unproductive) there is wanting nothing but capital, and roads to facilitate the transport from the place of extraction to that of exportation. Algeria is the classic land of cereals; it is known that at the commencement of the French occupation she did not produce enough to satisfy her own requirements; now she exports yearly nearly to the value of 120 million francs of grain or flour. Her wheat is much sought after in France for the making of maccaroni, which already rivals the best Italian. No country offers more favourable conditions for the cultivation of oleaginous and saponaceous plants; besides the sesamum, the arachic, linseed, cotton and lentiscus, the colza and the camelina, the castor oil and mustard, the cultivation of which might be indefinitely developed, this country possesses such enormous forests of olive trees, and if proper works for the purpose were undertaken, it might supply all Europe with oil. The export of olive oil has already reached seven millions of francs, but this figure might be easily increased fivefold. The olive trees of Algeria are neither subject to the diseases that often destroy the crops in France, nor do they suffer from falling off, or from frost. There is thus a rich mine for capital to work. Several textile plants grow spontaneously. Some, such as aloes, are suitable for use in the colony; others, such as the dwarf palm, the affa, and the drinn, afford inexhaustable resources for paper-making materials, and for the manufacture of half-stuff, which are becoming scarcer and scarcer in France. Flax is found in a wild state in the colony, and its cultivation holds out every promise of success. The cultivation of cotton, both long and short staple, is attended with the best results, and the produce will bear comparison with that of countries now celebrated for it. Materials for tanning and dyeing are equally abundant. For tanning, may be named oak bark, pine bark, and the sumac; for dyeing, the carthamus, henna (which is used at Lyons for dyeing silk black), cochineal, madder, which grows there admirably, and which is considered in commerce equal to the products of Cyprus and Avignon. Everywhere where the vine has been planted it has succeeded, and the principal markets of France and England are supplied with the early fruit and vegetables of this colony. Her tobacco, the cultivation of which is entirely free, is excellent, and with her better modes of cultivation, drying, and fermentation, it might become equal to that of Java, or the United States, or even that of Havana, and might supply all the markets of Europe. Among the fruit trees, all of which give exquisite fruits in considerable quantity, may be named the almond, the banana, the carob tree, the lemon, the fig, and the orange. Algeria possesses, spread over the whole surface of the country, either in forests of great extent or growing separately, many various species of woods adapted for building and industrial purposes, such as the myrtle, the cedar, the lemon, the carob tree, the Aleppo pine, the pomegranate, the green oak, the olive, the mastic tree, the pistachio, the orange tree, and especially the arbor vitæ, that matchless wood of which Parisian industry has taken possession, and of which it manufactures such charming specimens of cabinet-work. The numerous plantations of mulberry trees already existing afford an opportunity for a much larger development of silkworm cultivation. As to the animal products, Algeria leaves nothing to be desired. She possesses horses sufficient to remount the whole army of Africa. The bovine race is remarkable for its fine proportions. In the Sahara and in the Tell, flocks of sheep constitute the principal wealth of the pastoral tribes. What an enormous quantity of wool might be supplied by ten millions of sheep, if they were fed, sheltered, and cared for as they are in France. The wax, honey, and coral which is fished for on the African coast, are other sources of wealth. The general commerce of Algeria, which has increased in rapid proportions, is already of more than 250,000,000 francs. It consists chiefly in the importations from France and foreign countries, and in the exportation of Algerian produce. We speak only of the existing trade of Sahara, which, little developed yet, may one day attain an extraordinary importance, and for the present we confine ourselves to the Tell, which demands the first attention of the Algerian Society. Shipping also follows the onward career of progress, and will still further increase under the provisions of the new laws, which permit foreign vessels to trade between one Algerian port and another. The tonnage dues, which have occasioned frequent complaints, because it was said that they weighed heavily on French ships, will now equally apply to foreign ships, and will thus permit the industrial products of France and Algeria to compete freely in the Algerian markets with foreign products. New and regular services of

steam-packets are to be established on all the coasts. Messageries Imperiales will replace the government vessels on the lines on which they at present run. The Tonache Company continues its service, also the Talabot Company, the clippers of Cetté, and the vessels of the English company which touch at the principal ports on their way to Alexandria, will augment the commercial activity in the most important towns on the coast. The foregoing gives, in a few words, the actual resources of Algeria, and what they might become when the means of transport are improved, which there, more perhaps than anywhere else, play so important a part.

TRADE-MARKS.—The *Times* City article says:—"The general sense of what is due alike to the public and the interests of commerce causes the Trade-Marks Act to be enforced in nearly all places with wholesome severity. According to the recent advices from India, the police in June last entered the premises of a printer in Calcutta and seized a large quantity of forged labels of several English manufacturers, among which were those of Allsop and Sons, Lea and Perrins, P. and J. Arnold, Day and Martin, and Crosse and Blackwell. The latter firm immediately commenced a prosecution under the Trade-Marks Act (India), section 485 of the Penal Code, which resulted in the conviction of the offender, and his being sentenced to two years' rigorous imprisonment. A similar punishment was awarded to a native by whom some of the spurious goods upon which the forged labels were placed had been sold."

Colonies.

MANUFACTURES IN VICTORIA.—The Colonial Legislature having last year voted a sum of money to reward founders of new industries, a large number of applications have been made. First come the textile manufactures. Of cloth, the only specimen is some tweed from Wannon mills, which is coarse but strong, substantial, and fit for many valuable uses if its production can be made to pay. A much higher completeness has been obtained in some straw manufactures, which have been forwarded, together with samples of material. The straw used is that of the red Tuscan wheat and rice. Of leather there is a respectable show of bales of different quality, coloured roans, imitation moroccos, and basils, for books or carriages, calf of various degrees of fineness, and fine-dressed kid suitable for gloves, &c. Some slighter evidence of manufacture are to be found in a few woollen tufts, buttons, &c., for ornamenting railway or other carriages. Specimens of blasting powder of colonial invention have also been sent, together with samples of cartridges. A large collection of jams, pickles, &c., have been sent. There are also some good specimens of earthenware, in the shape of vases, jugs, &c. There are also samples of flax, dressed and refuse hemp and tow, hops, Russian hard wheat, and spirits derived from the grass tree.

PROGRESS IN NEW ZEALAND.—The *Southern Cross* says:—"Since our last monthly epitome of news for England we are enabled to chronicle the steady advance the province is making in actual settlement. The general features of the country are rapidly changing, and the country settlers are contented and thriving. The Waikato settlers are taking root, and will be able, through the help rendered by the Provincial Government, to get over the winter. This will be the severest trial to them. At Tauranga and on the east coast matters are improving, and settlement will progress rapidly there as soon as the Government can complete the surveys and throw open the land. From the northern settlement we hear of nothing but satisfactory accounts. Mr. Walton is opening the coal mines at Wanganui, and coal is now among our articles of domestic produce. On the west coast the trade between Onehunga and Kaipara is increasing so fast that two additional coasters are being laid on as regular traders. From the various settlements along the coast, gum, flax, and agricultural produce come more freely forward than for several years past. In short, our domestic trade has revived very much since the cessation of hostilities. The energies of the settlers are being directed into the proper channel, and with continued peace their efforts will soon tell. Coromandel still yields steady returns of gold."

Publications Issued.

SHIPBUILDING, THEORETICAL AND PRACTICAL, by Isaac Watts, Esq., C.B., late Chief Constructor to the Royal Navy; W. J. M. Rankine, Esq., C.E., LL.D., F.R.S., &c., Associate Member of Council of the Institution of Naval Architects; Frederick K. Barnes, Esq., Department of the Comptrollor of the Royal Navy, Member of the Council of the Institution of Naval Architects, &c.; James Robert Napier, Esq., Shipbuilder and Marine Engineer, Glasgow, President of the Institution of Engineers in Scotland, &c.; with, as corresponding and general Editor, W. J. Macquorn Rankine, C.E., LL.D., F.R.SS.L. & E., Professor of Civil Engineering and Mechanics in the University of Glasgow, &c., &c. *(W. Mackenzie.)* This treatise includes contributions by eminent practical shipbuilders, and provides a complete system of information on the art of shipbuilding, and on the scientific principles on which it is founded, at a price not beyond the means of the general body of practical men who are engaged in that art. There is a growing interest felt in the education of British naval architects, and a strong desire that it shall not fall short of what is now being accomplished in France. Hence one object of the work is to lay down scientific principles of naval architecture in as clear and plain a manner as possible, for the benefit more especially of young students who may desire to be well grounded, in order that they may afterwards advance without hesitation in the prosecution of their honourable and useful profession. The work extends to 300 pages, illustrated by extensive tables, more than 100 woodcuts, and by upwards of 30 large plates of ships and engines, taken from models whose excellence has been proved by their practical success. The first part relates to the hydraulics of shipbuilding, or buoyancy, stability, speed and design, and explains the scientific principles which guide the naval architect in designing a ship, so that she shall possess the properties required of her, as to displacement, steadiness, and speed, in order that she may fulfil her practical object; and in computing the power which will be required to drive her at her intended speed, whether by sails or steam. The second part takes the geometry of shipbuilding, or modelling, drawing, and laying-off, and describes the methods by which the model and plans of an intended ship are constructed, and the figure and dimensions of her parts laid of. The third part sets forth the facts and principles known as to the strength of the materials of which ships are built, whether timber or iron, and the application of those facts and principles to practice. The fourth describes practical shipbuilding, and the processes gone through in shaping and putting together the materials treated of in the preceding part, during the actual building of ships, together with their whole structure and fittings. The fifth treats of the masts, sails, and rigging, and of the principles of propulsion of a ship by sails, and the structure of the parts which effect that propulsion. The sixth part sets forth the scientific principles of the propulsion of a ship by steam power, and the practical rules which regulate the construction and working of her engines. And the seventh explains the principles and practice of the art of building and fortifying vessels of war of different kinds, and is also illustrated by plates of H.M.S. *Warrior*, engraved from copies of official drawings authorised by the Lords of the Admiralty to be made for this work.

Notes.

METROPOLITAN SEWAGE IRRIGATION.—It appears by the report of the directors of the Metropolitan Sewage and Essex Reclamation Company that in order to demonstrate the truth of statements made before Parliament and elsewhere, that Maplin sand irrigated by sewage would produce luxuriant crops of grass, the directors caused upwards of 3,000 tons of sand to be brought up in barges from the Maplins, taken from a spot about a mile and a half out to sea, and spread two feet deep over an acre of land at the outfall reservoir at Barking Creek. The plot was spread in the early part of March last, was sown with Italian rye grass on the 14th April, and was fertilised exclusively with sewage. The first cutting made on the 20th June, from a portion of the acre, which was again cut on the 17th July; and the grass, exhibited at the Essex Agricultural Show on that day, representing as it did only twenty-seven days' growth, weighed at the rate of 14 tons an acre. Another portion of the same plot, which was cut for the first time on the 7th July, weighed at the rate of 16 to 20 tons an acre. With the further object of proving the value of sewage, the directors have leased a farm near Barking, to which an iron pipe is now being laid in advance of the main culvert, and they hope very shortly to show the Essex farmers, that by laying out a moderate portion of their land for irrigation they would not only derive a profit from the increase in their stock (which seven or eight annual cuttings of grass will enable them to make), but they would have the opportunity highly and profitably to manure the remainder of their land worked in the ordinary manner. It is hoped that the example thus set will be immediately followed by the Essex farmers as soon as the works shall have advanced sufficiently to enable the company to supply them with sewage. In conclusion, the directors congratulate the shareholders on the growing appreciation of the value of sewage, which is proved by the number of provincial towns that are following the example of the metropolis.

THE ACADEMY DELLA CRUSCA.—A communication from Florence, in the *Moniteur*, has the subjoined:—"A recent decree of the lieutenant of the kingdom modifies the constitution of the celebrated Florentine Academy of Della Crusca. By the terms of this decree the condition of Tuscan origin, previously exacted in order to obtain the title of resident academician, is abolished; henceforth, a fixed domicile at Florence will be sufficient. Moreover, the number of resident academicians is increased to eighteen. The Academy Della Crusca (of the bran), or 'Academia furfuratorum' (academy of bolters of bran), was founded in 1582, on the initiative of the poet Francesco Grazzini. The object of the foundation was to purify the Italian language, 'by removing the bran from the flour,' hence the name of the society, and hence also its emblem and motto, a sieve, with the inscription, 'Il piu bel fior ne coglie' (it plucks the finest flour). The Crusca published at Venice, in 1612, its first dictionary, in a single folio volume; but the work has progressively increased to six such volumes (edition Florence, 1729–38). Since then it has been an authority without appeal as regards the language, and the writers whose phrases or expressions had been admitted by the academy, such as Macchiavelli, Boccaccio, and others, were called Della Cruscan writers. To this academy were joined two others, more ancient, the foundation of which dates from the first half of the sixteenth century, those of the 'Apathetics' and the 'Moist;' and the three fused together bear to-day the name of Royal Florentine Academy. The curious appellations just mentioned were not peculiar to the learned societies of Florence. Amongst contemporaneous creations of the same class in other intellectual centres of Italy may be mentioned the Academies of the Confounded, the Sleepers, the Wide-awakes, the Inflamed, the Insipids, the Thunderers, the Corpses, and the Vagabonds. A German who wrote in 1725 reckons not less than six hundred of these societies existing at that period. No city was without one, and some had as many as twenty.

Patents.

From Commissioners of Patents' Journal, August 24th.

GRANTS OF PROVISIONAL PROTECTION.

Animal substances, preserving—1904—J. Morgan.
Armour plates, rendering inoxidisable—1934—C. E. Brooman.
Bolts and spikes—1900—M. Bayliss.
Circular saws, grinding and polishing—1812—E. McNally.
Dyeing and printing, alkaloid colouring matters for—1912—G. T. Bousfield.
Electricity, generation and transmission of—1878—J. P. Gillard.
Eyeletting machines—1095—W. Y. Edwards.
Fire-arms, &c., primings for—1896—G. Canouil.
Fire-arms, toy-arms, and detonating toys—1897—G. Canouil and F. A. Blanchon.
Furnaces—1892—R. Hooper.
Grate bars—1916—J. H. Johnson.
Intaglios, printing from metal in gelatinous ink—1918—W. B. Woodbury.
Kilns and furnaces—1752—H. A. Bonneville.
Lamps—1930—J. and J. Hinks.
Locomotive engines for steep inclines—1840—A. W. Makinson.
Marine boilers, feed-box for—1890—H. Trotman.
Meat, &c., implement for cutting and beating—1910—L. L. Sovereign.
Nail-making—1894—T. H. Lucas.
Railway waggons, tipping coal, &c., from—1886—W. E. Nethersole.
Reaping machines—1920—T. Corbett.
Rice, hulling and finishing—1922—W. E. Newton.
Segment shells—1914—A. Noble.
Sewing machines—1884—F. Neidlinger.
Sewing machines—1908—A. Kimball.
Sewing machines—1936—G. B. Woodruff.
Stables for horses—1040—J. Haworth.
Steam boilers, prevention of incrustation in—1924—E. P. H. Vaughan.
Steel-manufacture—1938—W. E. Newton.
Tin and terne plates—1902—J. Saunders and J. Piper.
Tubes and skewers for cops—1928—J. Strang.
Wool, condensing—1882—S. Longbottom and T. Shaw.

INVENTIONS WITH COMPLETE SPECIFICATIONS FILED.

Heating apparatus—2105—W. R. Lake.
Sewing machines—2112—A. L. Wood.
Colour-printing, inking apparatus for—2138—G. Haseltine.
Railway carriage springs—2140—J. Murphy.

PATENTS SEALED.

598. H. Wilson.
599. R. Yeates.
600. G. Zanni.
614. J. B. Booth.
618. G. Cowdery.
622. C. Powell.
652. E. E. Colley and W. Moss.
677. M. Henry.
707. J. Hunt.
729. R. Larkin.
782. T. Briggs, jun.

From Commissioners of Patents' Journal, August 28th.

PATENTS SEALED.

621. J. D. Dow.
623. A. C. Andrews.
624. E. Cottam.
626. J. Skinner.
627. W. Weldon.
628. W. Weldon.
632. W. B. Caulfield.
634. W. Conisbee.
641. J. Tansley.
644. J. W. Friend.
646. G. Prentice and A. B. Inglis.
651. W. E. Newton.
654. N. Thompson.
670. G. L. Leclanché.
671. C. W. Siemens.
685. J. Chubb.
718. A. T. Machattie.
903. R. M. Graystock.
945. G. Davies.
1281. J. Marsh.
1622. W. E. Newton.

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

2066. W. Galloway and J. Galloway.
2077. R. Thompson.
2088. S. Moore.
2120. W. E. Newton.
2132. H. W. Putnam.
2149. B. L. Burnett.
2159. W. Clark.
2092. A. Jobson.
2140. F. C. P. Hoffmann.
2097. H. F. McKillop.
2128. J. Alisen.
2129. C. Harratt.
2145. G. Attock.
2222. W. Clark.
2113. D. Blake.
2137. W. Whitworth and J. Wrigley.
2143. J. Dodge.
2198. J. B. York.

PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

1995. T. Aveling.